

U.S. Application of FINK et al., Appln. No. 10/705,224
atty. dkt. 071469-0305806

REMARKS

Claims 1 and 16 are amended. No claims are added or canceled. Accordingly, after entry of this Amendment, claims 1-17 will remain pending.

In the Final Office Action dated March 7, 2006, the Examiner rejected claims 1, 3-5, 9-14, and 16 under 35 U.S.C. § 102(b) as being anticipated by Hiroyuki (Japanese Patent No. 2002-252209). Claims 1, 6-8, and 14-16 were rejected under 35 U.S.C. § 102(b) as being anticipated by Tomoyasu et al. (U.S. Patent No. 6,264,788). In addition, the Examiner rejected claims 1, 8, and 14-16 under 35 U.S.C. § 102(e) as being anticipated by Li et al. (U.S. Patent No. 6,506,685). Claims 1, 7-13, 16, and 17 also were rejected under 35 U.S.C. § 102(e) as being anticipated by Ludviksson et al. (U.S. Patent Application Publication No. 2005/0041238). Next, the Examiner rejected claim 2 under 35 U.S.C. § 103(a) as being unpatentable over Hiroyuki or Tomoyasu et al. in view of Kanno et al. (U.S. Patent No. 6,646,233). The Applicant respectfully disagrees with each of the rejections and, therefore, respectfully traverses the same.

Claims 1-15 are patentably distinguishable over the references cited by the Examiner because the claims recite a baffle plate assembly that combines a number of features including, among them, a centering ring configured to be coupled to a substrate holder, wherein at least a portion of the centering ring extends radially outside a periphery of the substrate holder and a removable baffle plate comprising one or more passageways, wherein the baffle plate is configured to be centered within the plasma processing system by removably coupling the baffle plate to the portion of the centering ring extending radially outside the periphery of the substrate holder. Contrary to the assertion by the Examiner, none of the references, either alone or in combination anticipate or render obvious claims 1-15.

According to the English abstract, Hiroyuki describes a plasma etching apparatus that includes a baffle plate 12, an insulating ring 13 and first and second bellows covers 14, 15 formed from yttrium fluoride (YF₃). (Hiroyuki at the abstract.) As discussed in the translation, a baffle plate 12 is fixed, at least indirectly, to an insulating ring 13 and is fixed between an end face of the electrode protection member 8 and a side face of the electrostatic chuck 4. (Hiroyuki at paragraph [0018].) As also described, the first bellows covering 14 is installed from the bottom surface of the baffle plate 12. (Hiroyuki at paragraph [0018].)

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There is, however, no discussion of a centering ring or any structure that may be considered to be a centering ring. Moreover, the mere presence of one or more rings, such as insulating ring 13, would not be understood by those skilled in the art as a centering ring. Without a discussion of a centering ring, there is no discussion of a centering ring that is coupled to the substrate holder where at least a portion of the centering ring extends radially outside a periphery of said substrate holder. It follows, then, that Hiroyuki does not discuss that the baffle plate 12 is centered within the plasma processing system by removably coupling the baffle plate 12 to a portion of a centering ring extending radially outside the periphery of the substrate holder. Accordingly, the Applicant respectfully submits that Hiroyuki does not describe each and every feature recited by claims 1-15. For these reasons, among others, the Applicant respectfully submits that Hiroyuki cannot be relied upon to anticipate any of claims 1-15.

In addition, the Applicant respectfully points out that the baffle plate 12 appears to be sandwiched between the first bellows covering 14 and the insulating ring 13, with its interior edge abutting the side face of the electrode protection member 8 surrounding the electrostatic chuck 4. (Hiroyuki at the Figure on the abstract page.) The mere fact that the baffle plate 12 surrounds the electrode protection member 8 would not suggest to those skilled in the art that the electrode protection member 8 functions as a centering ring. In summary, there is nothing in Hiroyuki that would suggest, either directly, inferentially, or inherently, the combination of features as recited by claims 1-15. Accordingly, the Applicant respectfully requests that the Examiner reconsider the rejection of the claims for anticipation and withdraw the rejection.

Next, the Applicant respectfully submits that Tomoyasu et al. also fails to anticipate any of claims 1-15. Tomoyasu et al. describes a plasma treatment method and apparatus with a ring 325 freely detachably attached to the outer circumference of a susceptor 305. (Tomoyasu et al. at col. 11, lines 5-7.) A baffle plate 326, with a plurality of holes 328 therein, is made integral to the ring 325. (Tomoyasu et al. at col. 11, lines 12-13.) As discussed in Tomoyasu et al., the ring 325 may be detached from the susceptor 305 for cleaning. (Tomoyasu et al. at col. 11, lines 47-50.) In fact, prior to etching, plural rings 325 are prepared relative to the susceptor 305 so that one

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can be attached to the susceptor 305 while another is being cleaned. (Tomoyasu et al. at col. 12, lines 12-15.)

Since the baffle plate 326 is integrally formed with the ring 325, Tomoyasu et al. does not describe or suggest any centering ring coupled to the substrate holder where at least a portion of the centering ring extends radially outside a periphery of said substrate holder. In addition, there is no discussion of a removable baffle plate that is centered within the plasma processing system by removably coupling the baffle plate to the portion of the centering ring extending radially outside said periphery of the substrate holder. Accordingly, the Applicant respectfully submits that Tomoyasu et al. does not describe each and every feature recited by claims 1-15. As a result, the Applicant respectfully requests that the Examiner withdraw the rejection of the claims as being anticipated by Tomoyasu et al.

The Applicant also respectfully submits that Li et al. cannot anticipate any of claims 1-15. Li et al. describes a perforated plasma confinement ring 222 for a plasma reactor where a perforated plasma confinement ring 222 is disposed outside of the outer periphery of the bottom electrode 210 such that the perforated plasma confinement ring 222 abuts the focus ring 216, if the focus ring 216 is present. (Li et al. at col. 5, lines 25-28.) The focus ring 216 is not a centering ring, at least not so far as the discussion provides. To the contrary, the focus ring 216, which is optional, is disposed around the outer periphery of the bottom electrode 210. (Li et al. at col. 5, lines 5-7.)

Noticeably absent from Li et al. is any discussion of a centering ring coupled to the substrate holder where at least a portion of the centering ring extends radially outside a periphery of said substrate holder. In addition, there is no discussion of a removable baffle plate that is centered within the plasma processing system by removably coupling the baffle plate to the portion of the centering ring extending radially outside said periphery of the substrate holder. Accordingly, the Applicant respectfully submits that Li et al. does not describe each and every feature recited by claims 1-15. As a result, the Applicant respectfully requests that the Examiner withdraw the rejection of the claims as being anticipated by Li et al.

Next, the Applicant respectfully submits that Ludviksson et al. cannot anticipate any of claims 1-15 because it also fails to describe the combination of features recited by claims 1-15. Ludviksson et al. describes a method of using a

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sensor gas to determine the erosion level of consumable system components in an apparatus having a baffle plate 64 that extends about the periphery of the substrate holder 30. (Ludviksson et al. at paragraph [0047].) As Fig. 1 makes apparent, the baffle plate extends outwardly from the shield 14. Accordingly, Ludviksson et al. does not describe an arrangement with, among other features, a centering ring coupled to the substrate holder where at least a portion of the centering ring extends radially outside a periphery of said substrate holder. In addition, there is no discussion of a removable baffle plate that is centered within the plasma processing system by removably coupling the baffle plate to the portion of the centering ring extending radially outside said periphery of the substrate holder. Accordingly, the Applicant respectfully submits that Ludviksson et al. does not describe each and every feature recited by claims 1-15. As a result, the Applicant respectfully requests that the Examiner withdraw the rejection of the claims as being anticipated by Ludviksson et al.

With respect to the rejection of claim 2 under 35 U.S.C. § 103(a) as being obvious over Hiroyuki or Tomoyasu et al. or Li et al. or Ludviksson et al. in view of Kanno et al., the Applicant relies upon the discussion of the references above to respectfully point out that none of the references provide any discussion of the combination of features recited by claims 1-15. In addition, the Applicants respectfully submit that none of the references provide any suggestion that they may be combined with Kanno et al. to arrive at the combination of features recited by any of the claims.

Kanno et al. describes a wafer stage for a wafer processing apparatus and a wafer processing method that excludes any centering ring or baffle plate. Accordingly, those skilled in the art would not think to combine Kanno et al. with the remaining references to render obvious any of claims 1-15.

With respect to claim 16, the Applicant respectfully submits that the references do not describe or suggest a disposable baffle plate for surrounding a substrate holder in a plasma processing system with a removable ring comprising a first edge configured to be coupled removably to the substrate holder via a centering ring. Moreover, there is no discussion of a centering ring with at least a portion extending radially outside a periphery of the substrate holder, a second edge configured to be proximate a wall of the plasma processing system, and one or more

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openings to permit the passage of gas therethrough, wherein the coupling of the first edge to the centering ring facilitates centering the ring in the plasma processing system such that a space between the second edge and the wall is substantially constant. The Applicant respectfully points out that the discussion of the references in connection with claims 1-15 applies to claim 16 as well. Accordingly, without repeating the analysis of the references presented above, the Applicant respectfully submits that none of the references anticipates or renders obvious claim 16.

With respect to claim 17, the Applicant respectfully submits that the references do not describe or suggest a method of replacing a baffle plate disposed adjacent a centering ring with at least a portion of said centering ring extending radially outside a periphery of a substrate holder. In addition, the references do not describe or suggest such a method where the baffle plate surrounds the substrate holder in a plasma processing system. Further, the references do not describe or suggest a method that includes removing a first baffle plate from the centering ring in the plasma processing system and installing a second baffle plate in the plasma processing system by coupling the second baffle plate to the centering ring, wherein the coupling facilitates auto-centering of the second baffle plate in the plasma processing system. As discussed in connection with the rejections of claims 1-15 and 16, given that the references do not describe a centering ring with a removable baffle plate, the references cannot be relied upon to suggest the method recited by claim 17. Accordingly, the Applicant respectfully requests that the Examiner reconsider the rejection of claim 17 and withdraw the rejections asserted thereagainst.

Each of the rejections having been addressed, the Applicant respectfully requests that the Examiner reconsider the rejection of the claims and withdraw the asserted rejections.

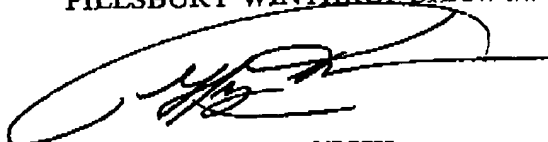
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Respectfully submitted,

PILLSBURY WINTHROP SHAW PITTMAN LLP



JEFFREY D. KARCESKI
Reg. No. 35914
Tel. No. 202.663.8403
Fax No. 202.663.8007

Date: June 7, 2006
P.O. Box 10500
McLean, VA 22102
(703) 770.7900

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